

LET'S MAKE IT AND TAKE IT APART

Gary R. Skuse, KA1NJL – RARA Vice President

The program for the February 7th RARA meeting will feature a former student of mine, Christopher Tomkins-Tinch, KC2WMO. Chris spent considerable time during his undergraduate years working at a couple of national laboratories and performing DOD-sponsored research at RIT. Since receiving his degree in Bioinformatics he worked for a while at a start-up company in the San Francisco Bay area before returning to Rochester to indulge his curiosity and his propensity for entrepreneurialism. Our Bioinformatics program requires students to think across disciplines and to be resourceful. Chris will give you a glimpse into some of those traits at the RARA meeting.



Chris will talk to us about the “The Missing Manual” and how we have become increasingly disconnected from the things we own. Like it or not, the world is becoming filled with appliance operators. I personally like to understand all of the technology I use. I am, after all, a ham. However, the increasing complexity and ubiquity of the technological things that surround

us make it harder and harder to do that. For example, do you remember when you could repair your own car cheaply and easily? The days of shade tree mechanics are long gone, with nearly everything within your car controlled by multiple computers. The same can be said about such mundane things as your refrigerator, TV and numerous other gadgets in your everyday life. Even our new stove has an inbuilt computer.

Chris will touch upon the Maker Movement. For some time there has been a movement afoot among self-proclaimed geeks to make things from other things. They will hack old electronics to enable new functions, they will design and build new devices to perform wanted or needed tasks and they share these experiences with other like-minded folks. There is, of course, a magazine called Make (www.makezine.com) that caters to members of the movement along with numerous other blogs, websites and media to share ideas and foster creativity. Along with this movement there is a trend toward do it yourself repairs. Consistent with that Chris will talk about his latest endeavor, www.takeitapart.com wherein he will showcase projects to disassemble everyday things. If time permits, he will even talk to us about the technical details involved with building the scalable web application that will support takeitapart.com.

Did I mention that our Bioinformatics students need to think across disciplines and be resourceful? This is certainly going to be an interesting program. Please join us for the next RARA meeting on February 7th at 7:00pm at the usual location, the Henrietta Fire Company #1 located at 3129 East Henrietta Road near Lehigh Station Road. I hope to see you there.

FEBRUARY 2014
VOLUME 66, ISSUE 6

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RARA MEETING
February 7th, 7PM

Henrietta Fire Co. #1
3129 East Henrietta Rd.
(15A)

THE PREZ SEZ

Bill Marinucci, WB2GHC – RARA President

January produced a weather phenomenon referred to as the 'polar vortex' which brought some of the coldest air into our area in decades. Couple that with gusty winds and it feels like the North Pole. Not exactly ideal conditions for any outdoor activities. Shelters were opened in Rochester by the Red Cross, and our local ARES group was activated. This is an important part of the amateur radio service, providing backup communications. My heartfelt thanks to all who participated.

We will be having our Winterfest on Saturday, February 1st, at the Stewart Lodge in Mendon Ponds Park. It will include a chili cook-off contest as well as a best dessert competition. So, 'get out of the house', and come join us. It might be cold outside, but we'll be warm and cozy in the shelter, and perhaps some hot chili to warm your 'innards'!

Plans are underway to have license training again this winter. All three license class courses will be offered. Check for details in this issue! This is a good time to get your license, or to upgrade your existing one. Since there are not many outside activities going on, you might find that you have more time to hit the books. What are you waiting for?

As part of our monthly meeting format, I ask newly licensed hams to stand up and introduce themselves to the group so that we can congratulate and welcome them into the ham community. There were several new tech class licensees at the January meeting. One young man was 11 years old. Congratulations to him and all on earning their new tickets. Then it was time for upgrades to stand up and make their accomplishment known to the group. There were several upgrades as well. One upgrade that really blew me away was a young man in the group that had just earned his general ticket. He was a ripe 9 years old! Way to go young man!! It just proves once again that you are never too young or too old to pursue the hobby. I am very encouraged to see young folks taking an interest in our hobby.

We now have a RaRa RAG editor, Forest Shick, WA2MZG, who has stepped up to fill the position. He is being assisted by Marisa Ashour, KC2VMM, who is a full time student at RIT and is also the president of the K2GXT Amateur Radio Club there. Thank you for your service folks, it is greatly appreciated. We have a potential volunteer to assume the role of Membership Secretary, who is reviewing the responsibilities for that position to see if there is a 'fit'.

Just a quick reminder. All four current officer positions on the Board are set to expire on September 30, 2014. Please give serious consideration to volunteering for one of these positions so that we can continue to maintain and grow our club.

See you at the Winterfest!

73

CALENDAR OF EVENTS

JANUARY 25TH - FEBRUARY 1ST - FEBRUARY 8TH - FEBRUARY 15TH - FEBRUARY 22ND

Very Basic Electronics

9:30 AM TO 11:30AM RIT, Gleason Hall, Room 9-3139

FEBRUARY 1ST - RARA Winterfest

11:00 AM at Mendon Ponds Park, Stewart Lodge

FEBRUARY 7TH - RARA General Meeting

7:00 PM at Henrietta Fire Co #1, 3129 East Henrietta Road

FEBRUARY 12TH - RARA Board of Directors

5:30 PM RIT Engineering Hall, Room 2110

FEBRUARY 15TH - RARA VE Testing

10:00 AM RIT Gleason Hall, Room 3139

HAM TECH – SDR RECEIVER

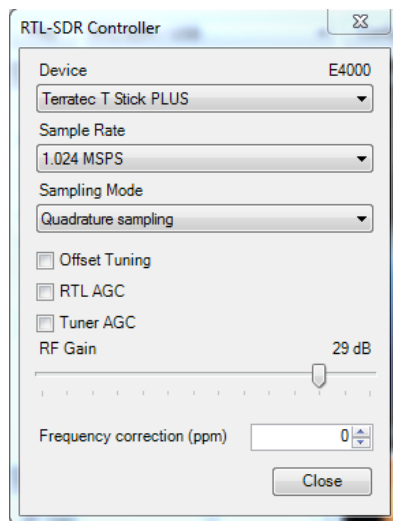
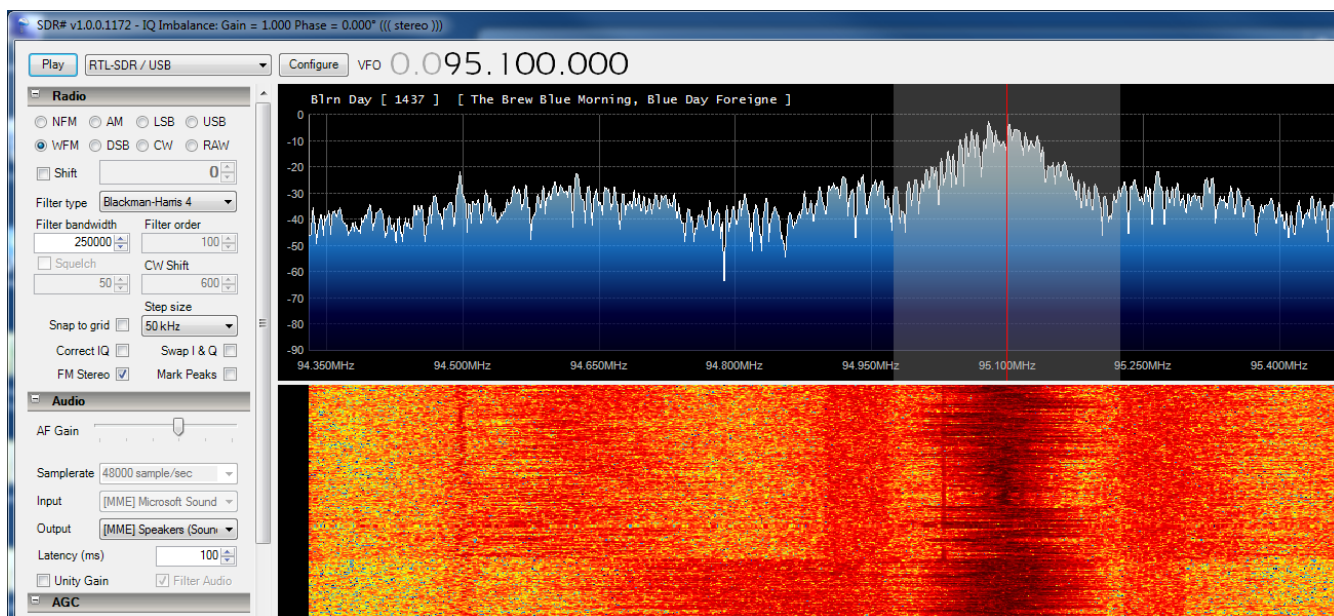
Duane Fregoe, K2SI

December was my time to upgrade an old Dell computer from Windows XP to Windows 7 due to the fact that Microsoft is stopping all future updates to XP in April 2014. It takes time to download the many ham radio programs that I have played with over the last 5 years on this computer. One of the programs that I installed was SDR# (SDR Sharp). SDR# is the software that works very nicely with the DVB-T dongle.



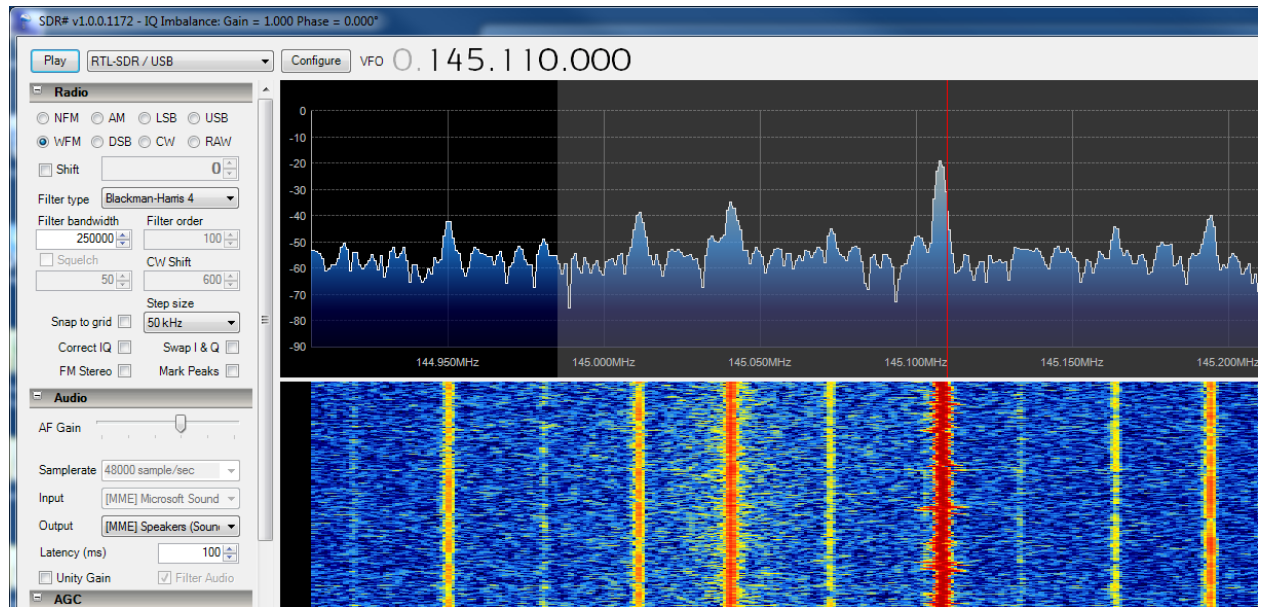
In this little USB device is the ability to receive FM broadcasts. These devices are available on the web by searching for “RTL2832”, “DVB-T”, or “SDR”. Be sure the device you select uses the RTL2832 and the E4000 combination. The parts required for this project are the dongle, a short piece of TV coax with F male connectors on each end, a PAL male to F female adaptor, and a SO-239 to F female adaptor. This will make for an easy connection to any of your shack antennas with a PL-259. My DVB-T dongle came with the PAL male to F female adaptor and a small telescoping antenna on a magnetic base with a PAL male connector and cost less than \$20.

Go to <http://sdrsharp.com/downloads/sdr-install.zip> to download the SDR# software. Double click the zip file and extract all the contents to a new folder. Within the **sdr-install** folder is a batch file named “install”. Double click and run “install”. Within the **sdr-install** folder will be an **sdrsharp** folder. In the **sdrsharp** folder is an application named “zadig” which contains the drivers for the DVB-T dongle. Double click “zadig” to load the drivers. Now plug in the DVB-T dongle and it should find the correct drivers. You can now run the SDR# application which is in the **sdrsharp** folder. Click on the play button and tune in your favorite FM radio station.



If the sound is breaking up you can click the Stop button, then click on the Configure button and lower the sample rate. Once you have made the adjustment, click the Close button and put the software back in play mode. With the right adjustment the music should sound good.

Now that you have your favorite radio station running it is time to locate your favorite 2M repeater. I was able to catch a conversation on the 145.110 repeater. The call signs in this QSO will be withheld to protect the guilty. I did have to increase the RF gain and the speaker volume to hear the repeater.



Now with the SDR receiver running correctly you can start playing around with the many options and adjustments available in SDR#. For information go to the January 2013 QST article titled "Cheap and Easy SDR". More information on SDR# is available at <http://sdrsharp.com/>. There are also HF converters available on the web to get the dongle to play on 6M and the HF bands.

RARA WINTERFEST REMINDER REDUX

Gary R. Skuse, KA1NJL

It's funny how the human brain works. Last week I was outside when the wind chill was at minus something or other and I thought "man it's chili". Then I thought, oh yeah, the chili cook-off at the RARA Winterfest is only a couple of weeks away. After that I thought "I'm hungry" and I went inside to get something to eat and I forgot all about the Winterfest.

In case you too have forgotten I want to remind you that the RARA Winterfest will be taking place on Saturday February 1st 2014 at the Stewart Lodge in Mendon Ponds Park, the same venue we used for the very successful RARA summer picnic. The lodge is well equipped to enable us to enjoy ourselves despite whatever weather Mother Nature throws at us. There is heat and a fireplace. The fun will start at 11:00am.



I would like to also remind you that we are going to have a chili cook-off at the 'fest (hence my thoughts as summarized above) and there will be prizes for the top three chili recipes and for the top three desserts. RARA membership points will be awarded for the best chili and the best desserts. Those points are redeemable toward your membership renewal, the annual banquet or some fashionable RARA apparel guaranteed to dazzle anyone you may encounter.

In addition to chili and desserts, we will also have radios on hand for some fun operating. Last year a number of prospective hams came and saw how much fun we have with our radios. I saw some of them again at a VE session when they left smiling proudly because they earned their ticket to enjoy one of the best hobbies ever.

Please plan to join us. This is truly an instance where the old saying, the more the merrier is true. And if you know any prospective hams who would like to come, please invite them as well.

VE TEAM INPUT

Ken Hall, W2KRH

We had 10 successful candidates in December, two of whom passed both the Technician and General exams in one setting: Kelly Wasson, KD2FHX and Kory Dwyer, KD2FHY. Congratulations to all who received or upgraded their license.

| | | | | | |
|--------|--------|---|-------------|--------|---|
| Allman | KD2FHV | T | Powell | KC2YSY | G |
| Baez | KD2FHW | T | Timmons | KD2DYX | G |
| Reid | KD2FIJ | G | Wasson | KD2FHX | G |
| Fields | KD2FCT | G | Dwyer | KD2FHY | G |
| Fields | KD2FCU | G | Fredrickson | K2ROC | E |

Silent Key

Carl E. Decker, KC2KPK
Hilton, NY
January 7, 2014

SEEK YOU

William Kasperkoski, WB2SXY

You started having fun with your first license, now, what else can ham radio do for you?

You've already taken the first step; you opened the door by getting licensed, and now you have a world of opportunity and fun of which non-hams can only dream. You are now among the four-per-thousand who have taken action. You expect more of yourself – you held up that mirror and decided - and demonstrated - that you wanted to be different. You have assumed leadership already.

Hams learn electronics, antenna and propagation theory to get licensed. Hams collect equipment to get on the air. Hams practice skills to become comfortable and have fun with on-the-air contacts; whether voice, CW, data or satellite. For many hams their FUN-AVOCATION of ham radio turns into a VOCATION in the various electronics-related fields. Ham radio is a lifelong passion that started many on their careers, encourages license upgrades and lifelong education, and it is not going to stop there.

The fun and skills of courteous operating, on-the-air maturity and decision making regarding technical issues are useful and transferable to any career. Many RARA hams have QSO'ed people in more countries than your coworkers or bosses can name. Hams generate personal goodwill daily without regard to the other operator's nationality, origin, age, gender, demographics, or native language. Other groups can only talk in platitudes about diversity, globalization and international relations; hams spearhead it at the push-to-talk and brass-pounding level every day- one QSO at a time! These are international issues that companies need and are vigorously seeking, and you are developing those skills right here. Hams do and have a lot more than they think.

So, what other fun and important skills can amateur radio offer to you?

Over the years RARA has had many programs on public service, public safety, and operating. You know a lot about ham radio at the operational level, how about at the visionary level? What do you think RARA should be doing in two years, maybe three?

Leadership is something that is taken.

You held up that mirror before and found out something about yourself; now hold up that mirror to RARA so we can see who we are, what values we hold, and what we want to grow into. Then turn the mirror so you can see the environment that RARA lives in. See the FCC and other organizations; where does ham radio fit in, and where as individuals do we fit in?

Every visionary job inside RARA is an open book for members. Call any officer and find out what other fun is waiting for you.

WINTER 2014 LICENSING CLASS

Pam Kasperkoski, W2PHK – RARA Education Coordinator

Looking for something to get your mind off this crazy weather? How about spending a few weeks preparing to get your Amateur Radio Technician's License? Or upgrading to General or Extra? Learn the basics! Get tips from the pros! Make new friends!

RARA will once again be offering classes, which will be held at the RIT campus on Tuesday evenings. The starting date has not yet been confirmed, but will be in the February / March timeframe. Classes will run for 10 weeks, and are FREE to RARA members and students, and only \$15.00 for non-members. Manuals can be obtained through the club at a discounted price of \$22.50. As an added incentive for new hams, RARA helps subsidize the cost of a small two-way radio for Technician course graduates.

So, what are you waiting for? Sign up now or get more information by e-mailing pamelakasper@frontiernet.net.

PEAK THE GRID

Forest Shick, WA2MZG

A few years ago I was looking for a new FM rig. After scanning many ads and browsing web sites I settled on the Yaesu FT-8900R. What attracted me to this unit? It has four ham band capabilities: 29, 50, 144, and 432 MHz. It also functions as if there are two independent radios in one box. Then there are a myriad of on-board options: selectable repeater offsets, selectable CTCSS tones, many scanning options, adjustable power levels and more. All I could think of was "how cool is that"!



I have to be honest, I do not spend a lot of time agonizing over specifications and reading reviews. If I recognize the manufacturer as a reputable organization and the features of the unit claim to do what I need, then I jump in feet first and buy it.

Not having given a lot of thought about how to connect antennas for four bands to one radio, I was surprised to discover there is only 1 SO-239 on the radio. Okay, so I can hook up a dual band 2M / 7M vertical without any problem, but what about 10M and 6M? I bought a duplexer that splits 90MHz and down from 125MHz and up; then I connected the 2M / 7M vertical to one port. I have a 6M Squalo that I connected to the other port but I have not found a 10M / 6M antenna. I use the radio on 50,144, and 423 MHz.

There is one antenna manufacturer that offers a four band mobile vertical that is compatible with 8900, but I am using the radio as a base station.

The next big discovery is all of the available features that are selectable / settable from the front panel switches. The manual appears to explain everything very well. Looking at the picture, the 4 knobs and 15 buttons seem to be a reasonable size. They are not – if you have "experienced" fingers!

I dug into the manual to learn how to set the radio up to operate my way. I discovered instructions such as:

- Press this key momentarily
- Press and hold this key for ½ second

Since when is ½ second a longer duration than momentarily?

① "Left" DIAL knob

This 20-position detented rotary switch is the tuning dial for the "left" band. Press this knob **momentarily** to switch the "Main band" to be the "left" band.

When the "left" band is set to be the "Main band" in the VFO mode, press this knob to enable rapid tuning (in 1 MHz steps) using this knob.

Press and hold in this knob for 1/2 second to toggle the operating band on the "left" side as follows:

144 MHz → 350 MHz → 430 MHz → 850 MHz → 29 MHz → 50 MHz → 144 MHz

With the tiny controls and vague distinction between momentary and ½ second, I reprogrammed and reprogrammed functions many times until I got them right. I read the manual a little more and found other options that I would like to use. So back to the beginning and start again.

Yaesu has included a four step procedure to reset the radio back to factory default condition. You lose all of your work but you have a known starting point to go through the agony of reprogramming the radio – one more time.

Finally I broke down and bought programming software and a cable. It is not too difficult to select the desired parameters although there are many, many options. While you are at it, be sure to set the transmit power level in case your power supply is not up to full power.

After I finally got everything set the way I like, it is a joy to listen to 28 & 50MHz on 1 receiver and 144 and 432MHz on the other receiver. The radio can actually scan all four bands on one receiver and 2 and 7 M on the other receiver.

In the end you have to ask yourself: are all these features worth it? What happened to user friendly interfaces? Have we become so addict to technology that we prefer features to usability? While pondering this thought – what about the HT's that are so small, so cheap and so complex to program – are they really worth it?

What happened to:

- Peak The Grid
- Dip the plate
- You are on the air?

HERE IS KÖNIGS WUSTERHAUSEN ON 2,700 METERS

Bill Hopkins, AA2YV

"Big Bertha," as we all know, was a whopping large caliber cannon (42cm) designed by Kaiser Wilhelm II's major arms manufacturer, Krupp, in June 1914, for any impending war the Reich might just have up its military sleeve. *Dicke* ("fat") *Bertha* was not to be mistaken for the "thinner" *Schlanke Emma*, with its mere 30.5cm caliber. These guns virtually "leveled" French fortresses in WWI, from 1914 to 1918. The word *big* took on new dimensions in this first ever military-industrial complex.

Technology "boomed" on several fronts, but not everything new and big needs to be destructive. Wireless communication in Germany began small, but for all that, very deliberately, and achieved major proportions by 1916. Already in 1897, over a small distance, from Berlin's Technical University to the Behringer Chemical factory, let's call it 300 meters maximum, Prof. Slaby and Dr. Georg Graf sent the "first" communicating radio signal in Germany, just one month after Slaby had seen a Marconi transmission (with its 20 inch spark!) between Lavernock Point and Flat Holm Island in Wales, likewise a few hundred meters. In July, the German team made a one-mile transmission across a lake, to duplicate the experiment, this time it seems over fresh water. (Of course, we pay homage to Dr. Heinrich Hertz for the first successful transmission carried out and written about in 1886 from Karlsruhe, Germany.)



A super rare early integrated circuit: 3N F.W. (@ 4 volts).



Königs Wusterhausen, tower 17 in background.

The first big radio installation in Germany was in Nauen in 1906, at the Air Ship Station for Zeppelins ferrying to and from colonies in Africa. Here, Telefunken's principal of the damped spark (diminishing sine wave strength) over the spark gap method came into German use; Morse code messages were fed in by machine. This 10 kilowatt transmitter, using a 100 meter tower at first reached up to 1800 miles. Telefunken then went to a more tonal signal and a higher frequency to achieve 2800 miles by 1909. The same year Nauen went on line, representatives from 30 countries met in Berlin to make wireless communications a governmental purview, and at the second conference, in 1912 in London, a radiotelegraph agreement was reached, regarding general radio operation and technology. Now, wireless communication certainly had the Kaiser's ears.

mere twenty miles east of Berlin, comes into the story and where today the first national transmitting station for Germany's military and later for civilian transmissions is showcased, in its Transmitter Museum. Here Germany's oldest iconic relic of that era is preserved: tower number 17, standing at 797 feet, renovated and painted red and white at a cost of over \$400,000. (Recently, Deutsche Telekom sold the property with this one remaining tower and radio building to the non-profit group "Sender Königs Wusterhausen e.V" for the whopping sum of one Euro and threw in the repair and paint costs for the tower. Then, this new Museum staff was on its own.

This past December, when I visited the site and Museum, situated on the old Mill Hill – with its brick municipal water tower – I was impressed at the sheer expanse of the land where the 22 antenna towers and three radio buildings once stood. (It's now called Radio Hill (*Funkerberg*).



Main building of Königs Wusterhausen.

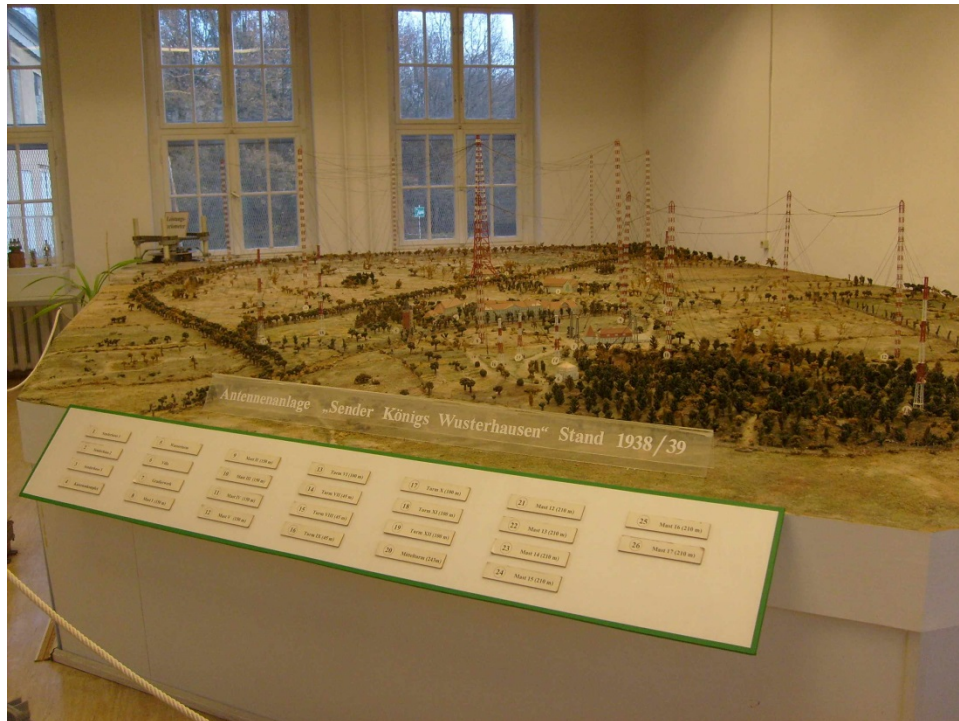
In the next RAG we will learn more about the early years of this gigantic radio transmitting facility.

Our own Antique Wireless Association Museum in Bloomfield, will soon have a corresponding partnership with the *Funkerberg Museum*. Both museums are a treasure.

For further info on these two fabulous wireless museums, have a look at:

<http://www.funkerberg.de/> and <http://www.antiquewireless.org>

Sources for this report were from an interview with Director Säuberling and the booklet “...Hier Königswusterhausen auf Welle 2700 ...”, Förderverein Sender Königswusterhausen e.V.. 3rd. ed., 2008, ISBN 3-933491-02-9.



Model of the Königs Wusterhausen station set-up.

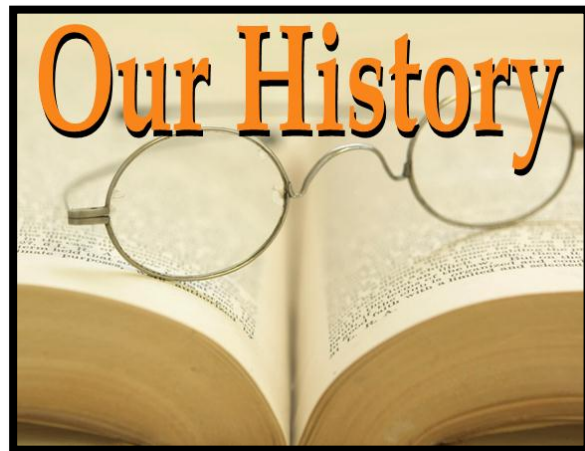
RARA RAGS OF THE PAST

Ed Gable, K2MP – RARA Club Historian

20 YEARS AGO, FEBRUARY, 1994

"Is Amateur Radio Harmful to your Health" was the attention grabbing headline of this issue. RaRa VP and Program Chairman Roger Harnaart, WB2BWQ, invited all to listen to Professor Gary Skuse, KA1JNL, from the U of R, who made the complicated subject easy to understand as well as entertaining.

Several pending RaRa activities were announced including the Spring Code and Theory classes, now in its 37th year, and at a new location, 111 Westfall Road. The RaRa Winter Carnival was likewise introduced as a great way to eliminate the dreaded cabin fever starting to set in for many of us. Hopkins Point Lodge was the venue and a promise of the unequaled dessert bake-off the drawing card. A new event, led by Chris Reich, WB2DYJ, was the first ever RaRa Field trip to the Rochester Edgerton Recreation Center and their unique city owned model train exhibit. RaRa's licensing exam testing crew; Barbara AA2CX and George, AA2FO (sk), announced seven new licensees as a result of their last session.



Reported here was an action by the FCC where new "Technician Plus" licenses will start to be issued, giving Technicians some HF privileges. The FCC further announced that VEC's could enter Form 610 data electronically via their web site.

Bob Hunter, NG2P, as a result of applying for a City Permit to install a 54 foot tower, was asked by the city planners to ask the amateur community for help in re-writing their tower ordinance. More on this later. With regret it was announced that Merton Collier, N2BXX, became a Silent Key. There were no Want Ads but Ramsey Surplus Outlet Store in Victor remained a commercial advertiser.

40 YEARS AGO, FEBRUARY, 1974

Continuing the long RaRa tradition of the VP acting as program chairman, Joe Hood, K2YAH, instructed members not to go to the normal venue at the Farm and Home Center, but rather to Kodak's building 28 at Kodak Park. There, the Kodak Park ARC would host RaRa at a program by Mr. R. L. Cox, who spoke on, and demonstrated the concept of film viewing using video techniques.

Following years of a program introduced by Cappy Capaldy, K2UXF, some twelve years ago, RaRa invited all to attend the annual Valentine Dinner-Dance. The new venue is the Hilton Inn on the Campus and the Master of Ceremonies, Eddie Dunn, W2ECH, will entertain. Len McCowan, K2CEH, wrote urging everyone to turn in their January VHF contest logs. From the Want-Ads you could buy a Tempo FMH hand held, with 13 crystals, from WA2YRT. Tire World of Greece, Ray Roberts WA2SSU (sk) proprietor, remained a commercial advertiser.

NEWS FROM AREA CLUBS

Amateur Radio Association of the Southern Tier, Inc.

The ARAST mini-hamfest is coming! Save Saturday, February 22, 2014 for the ARAST mini hamfest in Horseheads, NY.

Start time for the hamfest is 8:00 AM and it will go until 2:00 PM that afternoon. Location is going to be the same place as it's been before at the NY State Armory on Colonial Drive in Horseheads. As usual, we are offering breakfast starting around 7:00 AM with lunch available following.

Need a License upgrade or just starting out getting your first ticket? Exams will be available starting at 9:00 AM and walk-ins are always welcome.

This is an indoor event and we are excited to offer a place to setup for those items you've been meaning to sell. We request that you reserve a table by calling the hamfest hotline at 607-301-0040 or by visiting our website, www.arast.org. We have a PayPal account set up to handle your transaction. We cannot guarantee that a table will be available without a reservation.



We have wonderful prizes available for licensed individuals and we are expecting some vendors will attend.

CONTACT INFORMATION

Amateur Radio Association of the Southern Tier, Inc.
PO Box 614
Horseheads, NY 14845-0614

Need further information? Call the hamfest hotline at 607-301-0040 and we should be able to answer those questions.

So save Saturday, February 22, 2014 for the annual ARAST winter mini-fest at the NY State Armory in Horseheads, NY.

Talk-in available on the 147.36(+) repeater (no tone required).

EDITORS' NOTE

Free press is available for your club! We welcome brief updates and meeting notices from all area ham clubs. Just send your input to editor@rochesterham.org. When preparing your article, please remember to keep it short, and assume that readers know nothing about your club. The article should be focused toward non-members, and not your own current members... that's what your newsletter is for! We hope all area clubs will take advantage of this opportunity to interest new members in joining their ranks.

THE AMATEUR'S CODE

Originally written by Paul M. Segal, W9EEA (1928)

THE RADIO AMATEUR IS:

| | |
|--------------------|--|
| CONSIDERATE | Never knowingly operating in such a way as to lessen the pleasure of others. |
| LOYAL | Offering loyalty, encouragement and support to other amateurs, local club, and the American Radio Relay League, through which Amateur Radio in the United States is represented nationally and internationally. |
| PROGRESSIVE | With knowledge abreast of science, a well built and efficient station and operation beyond reproach. |
| FRIENDLY | With slow and patient operation when requested, friendly advice and counsel to the beginner, kindly assistance, co-operation and consideration for the interests of others. These are the hallmarks of the amateur spirit. |
| BALANCED | Radio is an avocation, never interfering with duties owed to family, job, school or community. |
| PATRIOTIC | With station and skill always ready for service to country and community. |

VISIT THE RARA WEBSITE!

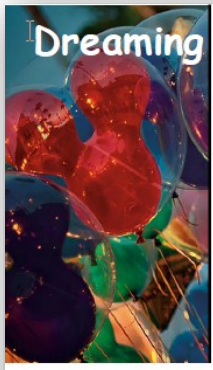
Did you know that your club's website (www.rochesterham.org) offers these features and more?

- Photos of meetings & events (you might be in there!)
- Info on upcoming meetings/programs
- Rochester Hamfest information!
- Online membership & renewal
- Track and redeem your Reward Points
- Public service info & sign-up
- VE testing info
- Back issues of the *Rag* in PDF
- Officer contact
- List of past presidents
- Online membership directory
- Order RARA logo products
- Useful Internet links
- Ham Radio 101 – tons of tutorial info, plus net & repeater listings



RARA MARKETPLACE

Your commercial ad could be here! The RARA Rag can help spread the word on your business at very reasonable rates.
Contact us for details at editor@rochesterham.org.




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FEBRUARY 15, 2014

For the next edition of the RARA Rag, we're looking for articles about projects related to amateur Radio activities, such as antenna builds!



**RARA meets at 7PM on the
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